भारतीय मानक

Indian Standard

IS 1009 : 2023

मैदा – विशिष्टि

(तीसरा पुनरीक्षण)

Maida — Specification

(Third Revision)

ICS 67.060

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November 2023 **Price Group 7**

Foodgrains, Allied Products, and Other Agricultural Produce Sectional Committee, FAD 16

FOREWORD

This Indian Standard (Third Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Foodgrains, Allied Products, and Other Agricultural Produce Sectional Committee had been approved by the Food and Agriculture Division Council.

Maida (refined wheat flour) is used in making bread, different types of biscuits, pastries and a number of other products. In India, its largest use is in the domestic sphere and in the preparation of Indian sweetmeats. The quality of *maida* depends largely on the type of wheat as well as the milling technique.

This standard was first published in 1957 prescribing two grades of *maida* and subsequently revised in 1968 to specify three grades, based on the gluten content. The limit for gluten content was lowered and requirements for crude fibre and acidity were deleted. The limits for total ash and alcoholic acidity were also revised. Besides, as the compulsory washing of wheat before milling, was introduced in the country, the limit for moisture content was raised. Since, separate standards had been brought out for wheat flour for use by bread industry IS 7464, wheat flour for use by biscuit industry IS 7463 and wheat flour for use in cake industry IS 9194, second revision was brought out in 1979 to delete different grades and only one set of requirement was prescribed specifying minimum 7.5 percent gluten content and a requirement for the maximum uric acid was also incorporated.

This revision is being brought to align the requirements of *maida* with the latest developments and the major changes include:

a) Limit for moisture content has been increased;
b) Minimum level for gluten content has been increased; and
c) Limits for lead, cadmium, aflatoxin B_1, total aflatoxin have been specified along with their test methods to align with *Food Safety and Standards* (*Contaminants, Toxins and Residues*) *Regulation,* 2011.

In the formulation of this standard, due consideration has been given to the provisions of the *Food Safety and Standards Act*, 2006 and the Rules and Regulations framed thereunder and the *Legal Metrology* (*Packaged Commodities*) *Rules*, 2011. However, this standard is subject to the restrictions imposed under these, wherever applicable.

The composition of the Committee responsible for the formulation of this standard is given in Annex H.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2: 2022 ‘Rules for rounding off numerical values (*second revision*)’. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

MAIDA — SPECIFICATION

(Third Revision)

1 SCOPE

1.1 This standard prescribes the requirements and the methods of sampling and test for *maida* (refined wheat flour).

1.2 It does not cover:

a) any product prepared from durum wheat, *Triticum durum* Desf, singly or in combination other wheat;
b) wheat flour destined for use as a brewing adjunct or for the manufacture of starch and/or gluten;
c) flours whose protein contents have been reduced or which have been submitted after the milling process to a special treatment other than drying or bleaching and/or to which have been added ingredients other than those prescribed in this standard; and
d) wheat flour for non-food industrial use.

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of these standards.

3 REQUIREMENTS

3.1 Description

Maida shall be the product prepared from clean wheat grains (free from rodent hair and excreta and bolting or dressing the resulting wheat meal), by grinding and milling processes in which the bran and germ are removed and the remainder is comminuted to a suitable degree of fineness. It shall be free from abnormal flavours, odours and any visible bran particles. It shall also be free from filth (impurities of animal origin), insect infestation, rodent hair and/or excreta. *Maida* shall be safe and suitable for human consumption.

NOTE — The appearance, taste and odour shall be determined by organoleptic tests.

3.2 Microscopic Appearance

When the product is subjected to microscopic examination, starch granules shall have the characteristic appearance as shown in photomicrograph reproduced in Fig. 1, revealing concentric rings.

3.3 Food Additives

Maida shall not contain any food additive.

3.4 The product shall be manufactured, packed and stored under hygienic conditions in licensed premises (*see* IS 2491).

3.5 The product shall also comply with the requirements given in Table 1.

3.6 The metal contaminants and other toxic substances, if any, in the product shall not exceed the limits specified in Table 2.

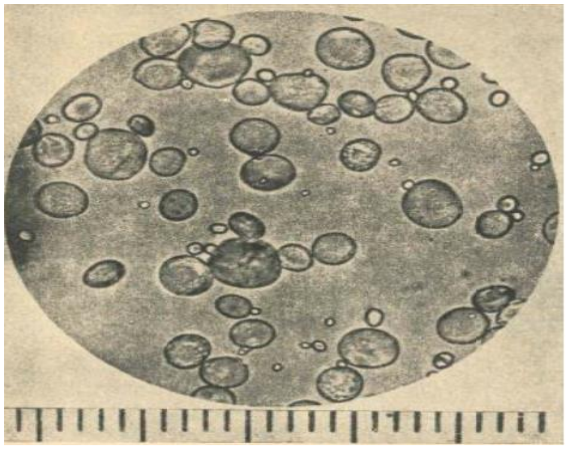

FIG. 1 PHOTOMICROGRAPH OF *MAIDA* STARCH (X 325) (SCALE: 1 DIVISION = 10 MICRONS)

Table 1 Requirements for *Maida*

(*Clauses* 3.5 *and* 7.1)

Sl No.	Characteristic	Requirement	Method of Test, Ref to
(1)	(2)	(3)	(4)
i)	Moisture, percent by mass, *Max*	14.0	Annex B
ii)	Total ash (on dry basis), percent by mass, *Max*	0.7	Annex C
iii)	Acid insoluble ash (on dry basis), percent by mass, *Max*	0.05	Annex D
iv)	Gluten (on dry basis), percent by mass, *Min*	9.5	Annex E
v)	Alcoholic acidity (as H_2SO_4) in 90 percent alcohol, percent by mass, *Max*	0.10	Annex F
vi)	Granularity	To satisfy test	Annex G

Table 2 Limits of Metal Contaminants and Other Toxic Substances

(*Clauses* 3.6 *and* 7.2)

Sl No.	Parameters	Requirement	Method of Test, Ref of
(1)	(2)	(3)	(4)
i)	Lead, mg/kg, *Max*	0.2	IS 12074
ii)	Cadmium, mg/kg, *Max*	0.1	**15** of IS 1699
iii)	Total aflatoxin, µg/kg, *Max*	15.0	IS 16287
iv)	Aflatoxin B_1, µg/kg, *Max*	10.0	IS 16287
v)	Uric acid, mg/kg, *Max*	100	IS 4333 (Part 5)

4 PACKING

4.1 The product shall be packed in containers which will safeguard the hygienic, nutritional, technological, organoleptic qualities. The containers, including the packaging material, shall be made of substances which are safe and suitable for their intended use. They should not impart any toxic substances or undesirable odour or flavor to the product. When the product is packaged in sacks, these must be clean, sturdy and strongly sewn or sealed.

4.2 The product may be packed in DW-flour bags (*see* IS 3984) or HDPE woven sacks (*see* IS 12100).

5 MARKING

5.1 The ink used for marking shall be of such quality which may not contaminate the product. Each package shall be suitably marked as to give the following information:

a) Name of the product '*maida'*;
b) Month and year of manufacture;
c) Name and address of the manufacturer;
d) Batch or code number;
e) Net quantity;
f) Expiry/Use by date; and
g) Any other information required under the *Legal Metrology* (*Packaged Commodities*)

Rules, 2011 and the *Food Safety and Standards* (*Labelling and Display*) *Regulations*, 2020.

5.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

6 SAMPLING

Representative samples of the product for ascertaining conformity to the requirements of this standard shall be drawn according to the method given in IS 14818.

7 TESTS

7.1 All the tests shall be carried out as specified in col (2) of Table 1 and Table 2.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals shall be employed in tests and distilled water (*see* IS 1070) shall be used where the use of water as reagent is intended.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the test results.

ANNEX A

(*Clause* 2)

LIST OF REFERRED STANDARDS

IS No.	*Title*
IS 460 (Part 1) : 2020	Test sieves: Part 1 Wire cloth test sieves (*fourth revision*)
IS 1070 : 2023	Reagent grade water — Specification (*fourth revision*)
IS 1699 : 1995	Methods of sampling and test for food colours (*second revision*)
IS 2491 : 2013	Food hygiene — General principles — Code of practice (*third revision*)
IS 3984 : 2002	Textiles — DW Flour bags — Specification (*first revision*)
IS 4333 (Part 5) : 1970	Methods of analysis for foodgrains: Part 5 Determination of uric acid
IS 12100 : 1987	Specification for high density polyethylene (HDPE) woven sacks for packing flour
IS 12074 : 1987	Method for determination of lead by atomic absorption spectrophotometer
IS 14818 : 2017/ ISO 24333: 2009	Cereal and cereal products — Sampling (*first revision*)
IS 16287 : 2015/ ISO 16050 : 2003	Foodstuffs — Determination of aflatoxin B_1, and the total content of aflatoxins B_1, B_2, G_1 and G_2 in cereals, nuts and derived products — High performance liquid chromatographic method

ANNEX B

[*Table* 1, *Sl No.* (i)]

DETERMINATION OF MOISTURE CONTENT

B-1 PROCEDURE

Weigh accurately about 10 g of the material in a suitable moisture dish, previously dried in an electric oven and weighed with its lid. Place the dish in an electric oven maintained at 130 °C to 133 °C for 120 minutes. Cool the dish in a desiccator and weigh with the lid on. Repeat the process of heating, cooling and weighing at half an hour intervals until the loss in weight between two successive weighing is less than 1 mg. Record the lowest weight obtained.

NOTE — Preserve the dish containing this dried material in a desiccator for the determination of total ash (*see* **C-1**).

B-2 CALCULATION

$$\text{Moisture, percent by mass} = 100 \times \frac{W_1 - W_2}{W_1 - W}$$

where

W_1 = mass, in g, of the moisture dish with the material before drying;
W_2 = mass, in g, of the moisture dish with the material after drying; and
W = mass, in g, of the empty moisture dish.

ANNEX C

[*Table* 1, *Sl No.* (ii)]

DETERMINATION OF TOTAL ASH

C-1 PROCEDURE

Weigh accurately about 5 g of the preserved material (*see* **B-1**) in a tared, clean and dry porcelain or silica dish. Ignite the material in the dish with the flame of a suitable burner for about 1 hour. Complete the ignition by keeping in a muffle furnace at 550 °C ± 10 °C until grey ash results. Cool in a desiccator and weigh. Repeat the process of igniting, cooling and weighing at half an hour intervals until the difference between two successive weighings is less than 1 mg. Note the lowest weight.

NOTE — Preserve this ash for the determination of acid insoluble ash (*see* **D-2**).

C-2 CALCULATION

Total ash (on dry basis), percent by mass =

$$100 \times \frac{W_1 - W_2}{W_1 - W}$$

where

W_1 = mass, in g, of the dish with the dried material taken for the test;
W_2 = mass, in g, of the dish with the ash; and
W = mass, in g, of the empty dish.

ANNEX D

[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF ACID INSOLUBLE ASH

D-1 REAGENT

D-1.1 Dilute Hydrochloric Acid — approximately 5 N, prepared from concentrated hydrochloric acid.

D-2 PROCEDURE

To the ash contained in the porcelain or silica dish (*see* **C-1**), add 25 ml of dilute hydrochloric acid,

cover with a watch-glass and heat on a water-bath for 10 minutes. Allow to cool and filter the contents of the dish through Whatman filter paper No. 42 or its equivalent. Wash the filter with distilled water until the washings are free from the acid. Return the filter and the residue to the dish. Keep it in an electric air-oven maintained at 130 °C to 133 °C for about 3 h. Ignite in a muffle furnace at about 550 °C ± 10 °C for 1 h. Cool the dish in a desiccator and weigh. Repeat the process of igniting in the muffle furnace, cooling and weighing at half-hour interval until the difference between two successive weighings is less than 1 mg. Note the lowest weight.

D-3 CALCULATION

Acid insoluble ash (on dry basis), percent by mass =

$$100 \times \frac{W_2 - W}{W_1 - W}$$

where

W_2 = mass, in g, of the dish with the acid insoluble ash;

W = mass, in g, of the empty dish; and

W_1 = mass, in g, of the dish with the dried material taken for the determination of total ash (*see* **B-1**).

ANNEX E

[*Table* 1, *Sl No.* (iv)]

DETERMINATION OF GLUTEN

E-1 PROCEDURE

Weigh accurately into a dish about 25 g of the material, add about 15 ml of water to the material and make it into a dough, taking care to see that all the material is taken into the dough. Keep the dough gently in a beaker filled with water and let it stand for 1 hour. Remove the dough and place it in a piece of bolting silk cloth with an aperture size of 0.16 mm or 150 micron IS Sieve [*see* IS 460 (Part 1)] and wash it with a gentle stream of tap water till water passing through the silk does not turn blue when a drop of iodine solution is added to it. Spread the silk tight on a porcelain plate for facilitating scraping. Transfer the residue from the silk by means of a spatula, to a tarred porcelain or silica dish. Spread the wet gluten into a thin layer and cut into small pieces. Transfer any residue sticking to the spatula into the dish. Place the dish in an air-oven maintained at 130 °C to 133 °C. Dry for 2 h, cool in a desiccator and weigh.

E-2 CALCULATION

Gluten (on dry basis), percent by mass =

$$10\,000 \times \frac{W_2 - W_1}{W\,(100 - W_3)}$$

where

W_2 = mass, in g, of the dish with dry gluten;

W_1 = mass, in g, of the empty dish;

W = mass, in g, of the material take for the test; and

W_3 = percentage of the moisture in the sample (*see* **B-2**).

ANNEX F

[*Table* 1, *Sl No.* (v)]

DETERMINATION OF ALCOHOLIC ACIDITY

F-1 REAGENTS

F-1.1 Neutral Ethyl Alcohol — 90 percent (*v/v*)

F-1.2 Standard Sodium Hydroxide Solution — 0.05 N

F-1.3 Phenolphthalein Indicator Solution — dilute 0.1 g of phenolphthalein in 100 ml of 60 percent (*v/v*) rectified spirit.

F-2 PROCEDURE

Weigh 5 g of sample into a conical stoppered flask and add 50 ml of neutral ethyl alcohol. Stopper, shake and allow to stand for 24 hours, with occasional shaking. Filter the alcoholic extract through a dry filter paper. Titrate the combined alcoholic extract against 0.05 N standard sodium hydroxide solution using phenolphthalein as indicator. Calculate the percentage of alcoholic acidity as sulphuric acid.

F-3 CALCULATION

Alcoholic acidity (as H_2SO_4) in 90 percent alcohol, percent by mass =

$$\frac{4.9 \times A \times N}{M}$$

where

A = volume, in ml, of standard sodium hydroxide solution used in titration;

N = normality of standard sodium hydroxide solution; and

M = mass, in g, of the material taken for the test.

ANNEX G

[*Table* 1, *Sl No.* (vi)]

DETERMINATION OF GRANULARITY

G-1 PROCEDURE

Transfer about 10 g of the material to 212 micron IS sieve [*see* IS 460 (Part 1)], and sieve for 2 min. Brush the upper surface of the sieve and sieve again for 1 min. 98 percent of material shall pass through the sieve.

ANNEX H

(*Foreword*)

COMMITTEE COMPOSITION

Foodgrains, Allied Products, and Other Agricultural Produce Sectional Committee, FAD 16

Organization	*Representative(s)*
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